



75018198



**EXAMINATIONS COUNCIL OF ZAMBIA**

**JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2021**

**Mathematics 401/2**

**Paper 2**

(INTERNAL CANDIDATES)

**Reading Time: 10 minutes**

**Marks: 50**

**Working Time: 2 hours**

**Examination Number:** .....

**School/Centre Name:** .....

**School/Centre Code:** .....

**Instructions to Candidates**

- 1 Write your **examination number, school/centre name and code** in the spaces provided on the question paper.
- 2 Ensure that you **write** your **examination number** on **every page** of this Question Paper.
- 3 There are **two (2)** sections in this paper, **A** and **B**.  
Section **A**: There are **two** questions in this section, answer both.  
Section **B**: Answer any **three (3)** questions.
- 4 Write all your answers in the spaces provided on the question paper.
- 5 All essential working must be shown. Candidates will be penalised for omitting essential working.
- 6 Tick (✓) the questions you have attempted in Section **B** in the grid provided below.

Section	A		B						Total marks
	1	2	3	4	5	6	7	8	
Questions									
Tick	✓	✓							
Mark									

**Information for Candidates**

Cell phones and calculators are **not allowed** in the examination room.

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## Section A [20 marks]

There are **two** questions in this section, answer **both**. Each question carries 10 marks.

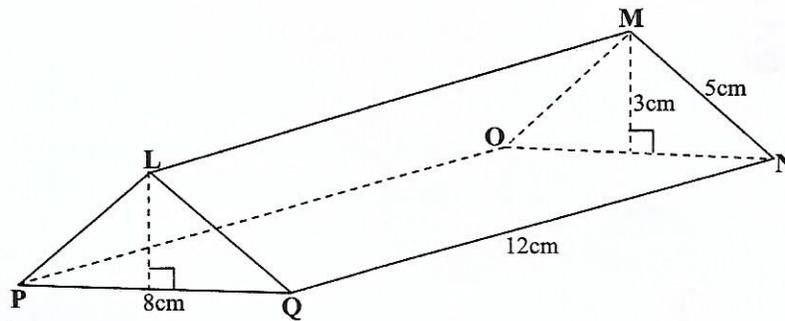
1 (a) Express 187 863 in standard form correct to 3 significant figures. [2]

(b) Solve the equation  $\frac{x-3}{2} - 1 = x$ . [2]

(c) Given that  $M = \begin{pmatrix} 2 & 4 \\ 0 & -2 \end{pmatrix}$  and  $N = \begin{pmatrix} 1 & -1 \\ 3 & 0 \end{pmatrix}$ , find the matrix  $N - \frac{1}{2}M$ . [3]

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- (d) The diagram below is a triangular prism LMNOPQ.



Given that  $PQ = 8\text{cm}$ ,  $QN = 12\text{cm}$ ,  $MN = 5\text{cm}$  and the height of the triangle  $MON$  is  $3\text{cm}$ , calculate the total surface area of the prism. [3]

[Total: 10]

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- 2 (a) A bag contains 4 blue and 10 red sweets of the same type and size. If one sweet is selected from the bag at random, find the probability that it is red. [1]

- (b) A salesperson receives a basic salary of K1 500.00 per month. He also receives a commission of 3% on all his sales. If the total sales for a month is K27 000.00, calculate his monthly income. [3]

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- (c) (i) Use geometrical instruments to construct an equilateral triangle ABC with side 8cm. [1]
- (ii) Bisect angle BAC and angle ABC and let the angle bisectors meet at O. [2]
- (iii) Draw a perpendicular from O to the side AB. Label the point where the perpendicular meets AB as D. [2]
- (iv) With centre O, draw a circle which touches the three sides of triangle ABC. [1]

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[Total: 10]

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**Section B [30 marks]**

There are **six** questions in this section, answer **any three**. Each question carries 10 marks.

- 3 (a) Solve the simultaneous equations  
 $3x + 2y = 10,$   
 $5x - 2y = 22.$

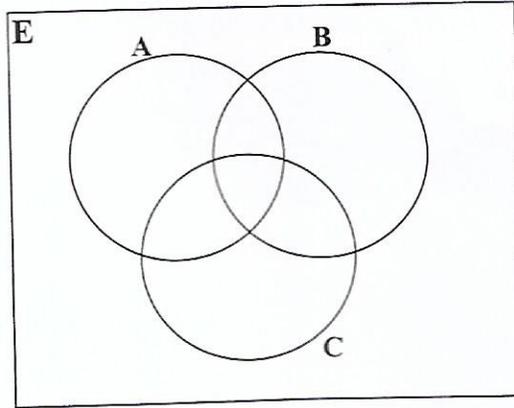
[3]

- (b) A man bought a car valued at K44 700.00. How many dollars did he pay for it, given that the exchange rate on that day was \$1 to K14.90?

[3]

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- (c) Given that  $A = \{t, i, m, e, s\}$ ,  $B = \{t, e, r, m, y\}$  and  $C = \{a, n, s, w, e, r\}$ ,
- (i) illustrate this information in the Venn diagram below, [2]

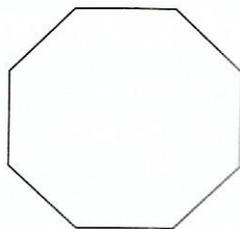


- (ii) list the elements of the set  $(A \cup B)' \cap C$ . [2]

[Total: 10]

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- 4 (a) Calculate the sum of the interior angles of the regular polygon below. [2]



- (b) Given that  $X = \begin{pmatrix} 4 \\ -2 \end{pmatrix}$  and  $Y = (-3 \ -4)$ , express  $XY$  as a single matrix. [2]

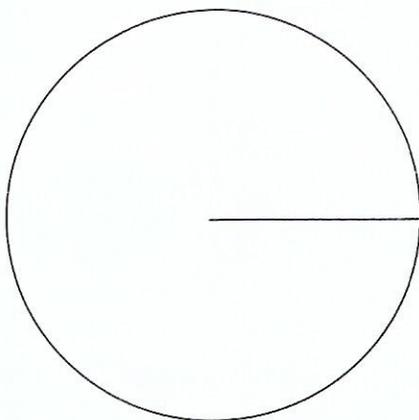
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- (c) A bed costs K8 600.00 inclusive of Value Added Tax (VAT) at 16%. Calculate the cost of the bed if VAT is excluded. [3]

- (d) The frequency table below shows the types of movies that 20 learners like watching on television.

Type of movie	Comedy	Action	Adventure	Drama
Number of learners	4	8	6	2

Illustrate this information on the pie chart below. [3]



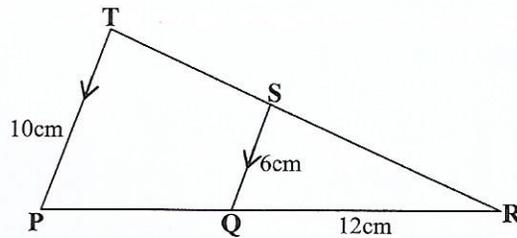
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[Total: 10]

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- 5 (a) Multiply  $2314_{\text{five}}$  by  $13_{\text{five}}$ , giving your answer in base five. [3]

- (b) In the diagram below,  $PT = 10\text{cm}$ ,  $QS = 6\text{cm}$  and  $RQ = 12\text{cm}$ .  $TP$  is parallel to  $SQ$ .



Calculate PQ.

[3]



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6 (a) Simplify  $4p - q - (3p - 2q)$ . [2]

(b) Find the value of  $110\ 110_{\text{two}} \div 1\ 001_{\text{two}}$ , giving your answer in base 2. [2]

(c) A bicycle can be bought for K1 200.00 cash. It can also be bought on hire purchase by paying a deposit of K600.00 and 3 monthly instalments of K350.00 each. Calculate the hire purchase price. [3]

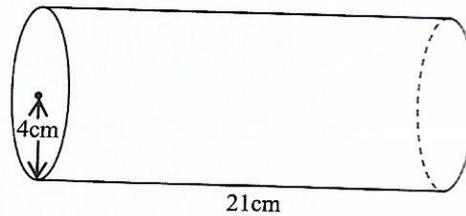


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- 7 (a) Given that  $m = \frac{4n}{n-5}$ , make  $n$  the subject of the formula. [3]

- (b) The diagram below is a cylinder of radius 4cm and height 21cm.

[Take  $\pi$  as  $\frac{22}{7}$ ]



Calculate its volume.

[3]

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- (c) The marks obtained by 30 learners in a Mathematics test were as follows:

45 42 46 25 57 39

42 55 20 37 40 59

11 38 34 22 62 33

48 43 57 37 43 51

29 41 35 66 45 32

- (i) Complete the frequency table below. [3]

Marks	Tally Mark	Frequency
10 – 19		
20 – 29		
30 – 39		
40 – 49		
50 – 59		
60 – 69		
	Total	

- (ii) What was the modal class? [1]

**[Total: 10]**

- 8 (a) Solve the inequation  $2(x - 4) \geq 3x + 1$ . [3]

